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Use of Medicines by Community Dwelling Elderly in Ontario

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Use of Medicines by Community Dwelling Elderly in Ontario

by

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Keywords: elderly, medicine-use, prescriptions medicines, over-the-counter medicines, natural health products

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Abstract

Objective. Prescription medicine use by the elderly is of growing concern as indicated by a large literature focused on rising costs, patient compliance and the appropriateness of -use. However, prescriptions account for only a portion of medicines used by the elderly, who have increasing access to non-prescription medicines and natural health products. The objective of this paper is to describe overall medicine use among the elderly in Ontario.

Methods. Using the National Population Health Survey (1996/97), we describe self-reported use of prescription, non-prescription and alternative medicines among elderly Ontarians aged 65+, and we compare use among four age sub-groups and by gender. Analysis is focused on the prevalence of, and the relative balance of use of different types of medicines.

Results. About one quarter of the respondents reported using no prescription or non-prescription medicines in the two days prior to being surveyed; a large majority reported using two or fewer medicines only, and use of non-prescription medicines was reported more often than prescription medicines (56% vs 48%). Use of natural health products by seniors is relatively low, but we observe a trend toward increased use in younger age groups.

Discussion. The findings place the consumption of prescription medicines by the elderly into a broader context that reveals that much of medicine use by the elderly involves non-prescribed products. We highlight the need to better understand seniors' decision-making regarding the different types of medicines available, and the financial costs and health risks of the medicine regimes of elderly persons. (248 words)

Introduction

A large literature on seniors and prescription medicines is focused on increasing use, appropriateness of use, and costs. Studies of prescription medicine are abundant because drug program databases provide the means to monitor prevalence of and cost of prescribing to seniors and other covered groups[1], and have shown that prescription drug costs are growing faster than any other type of health care expenditure [2-3].

Studies of the appropriateness of use of prescription medicines[4-5] typically assess patient compliance with medication directives. These indicate that compliance rates vary from 33 to 50%[6]. Inappropriate prescribing, over-prescribing, and under-prescribing to the elderly have also been identified as significant problems for both patients and for the health care system, resulting in higher rates of morbidity and mortality, and increased costs [7-8].

However, the capacity to estimate the full health and economic costs or benefits of medicine use by the elderly is limited when research is focused on prescription-use, to the exclusion of non-prescription products. One problem limiting the study of overall medicine use is a lack of comprehensive data [9-12]. Yet, findings from smaller-scale studies on the use of non-prescription or over-the-counter medicines (OTC) and natural health products (NHP) reveal that these are used in conjunction with prescription medicines, not instead of them[13-20]. Markets in OTCs and NHPs are growing along with the market in prescription medicines, so the elderly have access to a drug market that is much broader than a province's prescription drug formulary.

In summary, there are many more medicines available for use than are included in provincial formularies, and there are few studies documenting overall medicine use by the elderly. Overall use of medicines by the elderly and the outcomes of use are, therefore, under-investigated and poorly understood.

Methods

The data presented here are drawn from the National Population Health Survey (NPHS) for 1996/97, and are representative of community-dwelling persons aged 65+ living in Ontario during that year. Details of the NPHS survey design have been documented elsewhere[21].

In this presentation, we focus on a set of questions about respondents' use of medicines in the two days prior to the interview. The questions include: 1) how many medicines had been used; 2) what specific medicines were used; and 3) what additional health products were used. With respect to the latter two questions, and as a means to ensure data quality, telephone interviewers asked respondents *to retrieve and read the exact name of each medicine or health product* to the interviewer. Respondents could provide the names of up to 12 drugs and up to 12 health products; these were then assigned codes from the Anatomical Therapeutic Chemical Classification System for Human Medicines (ATC). We then constructed the variable "drug type", allocating each drug or health product in

the ATC to one of four medicine categories[a]: 1) prescription 2) non-prescription 3) prescription or non-prescription (dose dependent) or 4) natural health product.

We report summaries of the numbers of prescription and non-prescription medicines used by Ontarians aged 65 and over, and the distribution and combinations of types of medicines used in this population in total, by age-group and gender.

Results

The data presented in the tables reflect population parameters, based on estimation procedures provided by Statistics Canada [21]. The total weighted N for data on quantity of use of medicines is 1,303,740 (57% female; 34% aged 65-69; 29% aged 70-74; 18.5% aged 75-79; and 18% aged 80 and over). The total weighted N for data on types of medicines reported (ATC classifications provided) is 850,975 (56.5% female; 36% aged 65-69; 28% aged 70-74; 19% aged 75-79; and 17% aged 80 and over).

Table 1 About Here:
Self Reported Number of OTC and Prescription Medicines Used in 'Last Two Days' (1996/97) by Population, Age-group and Gender (N=1303740)

Table 1 illustrates the number of prescription (Rx) and over-the-counter (OTC) medicines used during the 'past two days'[b]. About one quarter (26.6%) of the elderly population took no prescription or non-prescription medicine in the two days prior to the survey, 25% took one medicine, 20% took 2 medicines, 11% took 3 medicines, 7% took 4 medicines, and 9% took 5 or more medicines. This distribution is similar for men and women, where equal proportions took only one medicine (about one quarter), and most took two or fewer medicines during the preceding 2 days (74% and 70% respectively). However, men were significantly more likely than women to have taken no medicines (30% v 24%). Comparing age groups, persons aged 65-69 were the most likely to have taken no medicines (32%), and this group differed significantly from all other age groups. Those aged 80+ were the least likely to have taken no medicines (20%), differing significantly from those aged 65-69 and 70-74. The two youngest age groups were significantly less likely to have reported taking five or more medicines (7% of each group) than those aged 75-79 and 80+. The oldest group (80+) was most likely (13%) to report having used 5+ medications. These data indicate there is a relationship between age and gender, and quantity of prescription and over-the-counter medicine use.

Table 2 About Here
Types of Medicines Used in 'Last Two Days' (1996/97) by Population, Age-Group and Gender (N=850,975)

[a] Prescription designations vary by province. This classification was based on prescription/non-prescription designation in Ontario in 1996.

[b] The table refers only to the number of Rx or OTC medicines reported. Therefore, the *numbers of drugs* reported by respondents is conservative, as natural health products are excluded.

Table 2 illustrates the types and combinations of medicines used, for the total population, and by age group and gender. In general, 48% of the elderly reported using prescription medicines, 56% reported using over-the-counter medicines, and 7% reported using natural health products. About one quarter of the elderly reported using none of these three medicine types, and about 3% reported using all three concurrently.

Some age and gender differences are notable. For example, the youngest age group is the most likely to have reported using none of the medicines types (29%) in the two days prior to their interview, a significantly greater proportion than those aged 70-74 (23%) and 80+ (19%). Men were significantly more likely than women to have reported using none of the three medicine types (29% v 21%).

Examining specific medicine types, respondents aged 65-69 were significantly less likely than those aged 70-74 to report using prescription medicines, and females were significantly more likely than males to do so. There were no differences in rates of use of non-prescription medicines by age or gender. Women were significantly more likely than men to report using natural health products and all three medicine types concurrently, while there were no significant age group differences in reported use of natural health products or concurrent use of three medicine types.

Among all groups examined, similar distributions of use of the three types of medicines are evident: OTC use was more common than use of prescriptions, small proportions reported using any NHPs (< 8%), and even fewer reported using all three types of medicine concurrently (<3%).

Figure 1 About Here
Self Reported Types and Combinations of Medicines Used in 'Last Two Days' (1996/97) (N=850,975)

In Figure 1, the distribution of types and combinations of medicines is illustrated. This figure shows that use of OTCs alone was more common than the use of prescriptions alone (21.1% and 15.1% respectively). The use of NHPs only was infrequently reported by the elderly (1.2%), although we observe a trend toward increasing use in younger age groups. The concurrent use of OTC and Rx medicines was more common than other combinations (29.2%). Concurrent use of OTCs and NHPs, and prescriptions and NHPs occurred infrequently (2.5% and .7%). Few elderly reported using all three types of medicines at the same time (3.0%). A small proportion reported using "other medicines only" (3.1%)[c]. Finally, a large proportion of the elderly reported that in the two days preceding their interview, they had been using no medicines at all (24.5%).

Discussion

[c] We are unable to determine whether these medicines were prescribed or purchased "over-the-counter", hence conceptually, we are uninterested in this category. The figure includes the "other only" category only to "round out" the pie chart (to account for all types of medicines reported).

The results suggest that to some extent age accounts for quantity and relative proportions of use of different medicine types in a community population of seniors, with the greatest differences noted between the youngest and oldest groups. Non-use varies by age in the direction one might predict (greater for youngest seniors, less non-use among the oldest-old). In general, there is stability in types and combinations of medicines used in all age groups. Similarly, some gender differences in non-use and types of use are observed. Women are less likely to be non-users than men and more inclined to concurrent use of different types of medicines, but there stable patterns of use observed for men and women, as for age (more OTC than Rx, few NHPs, fewer Rx/OTC/NHP). We suggest that observed gender differences in use of medicines may reflect gender differences in noticing symptoms, in seeking and in receiving health care[22].

Reported non-use of prescription medicines (52%) 'in the past two days' and the consistency of non-use across age groups and gender are in stark contrast to analysis of formulary data that show high rates of *prescribing* to the elderly. For example, one study reported that approximately 90% of Ontario elderly received prescription medications in each year, from 1993 to 1997[23]. This difference may reflect the limitations of self-report data [24]; it could be explained by the different time frames for the data (past two days v per year) or the different types of data (prescriptions filled and reimbursed by the ODB v self reported use of medicines). Given that studies consistently show high rates of non-adherence or non-compliance [6], it is reasonable to assume that receipt of a prescription is a poor estimate of actual use of medicines. There may be something to be learned from "low medication-use" seniors who report they are not using prescription or other types of medicines. In ongoing work, we are modeling the characteristics of non-use, low-use and high-use of medicines among the elderly. In our analysis, we will estimate potential under-treatment (based on disease categories and medicines available for their treatment) and discuss the possibility that some elderly may not be receiving medicines that could enhance and extend their lives.

With respect to overall use of medicines, the finding of high rates of non-use (about 25%) and low rates of high use (<10%) is consistent with other data on health services utilization documenting a disproportionate share of health services utilization (hospital beds, physician visits, prescriptions) and costs by the elderly, largely accounted for by intensive use of services by a small proportion of the elderly, typically the very old and very sick [25-29]. The question to be pursued, then, is whether the use and costs of medicines are justifiable in terms of positive contributions to quality of life and health among those elderly who are using prescription and non-prescription medicines.

The findings have two central implications. First, given the extent of use of non-prescribed medicines (OTCs and NHPs), there is a need to know more about elderly self-care and self-medication [30-31], including how individuals make choices about OTC and NHPs use, and their sources of information. Our search of the literature revealed that little attention has been paid to how a socially and culturally diverse Canadian elderly population negotiates this broad market in medicinal products, or to the short- and long-term health effects of seniors' selective use of the variety of available medicines. Further,

the role of the physician or pharmacist with respect to surveillance of, or counseling around the use of non-prescription medicines by the elderly requires further study.

Second, given the extent of use of non-prescribed medicines that are commonly purchased out-of-pocket (OTCs and NHPs), there is a need to better understand the influence of cost of medicines on patient health outcomes (and of costs as deterrents to use). Further, an assessment of the extent to which elderly patients subsidize the provincial drug benefit programs when they engage in self care using non-prescribed medicines is in order. Such an evaluation (of health outcomes and costs) would make an important contribution to discussions in public health research of the value of drugs in the care of the elderly. (1977 words)

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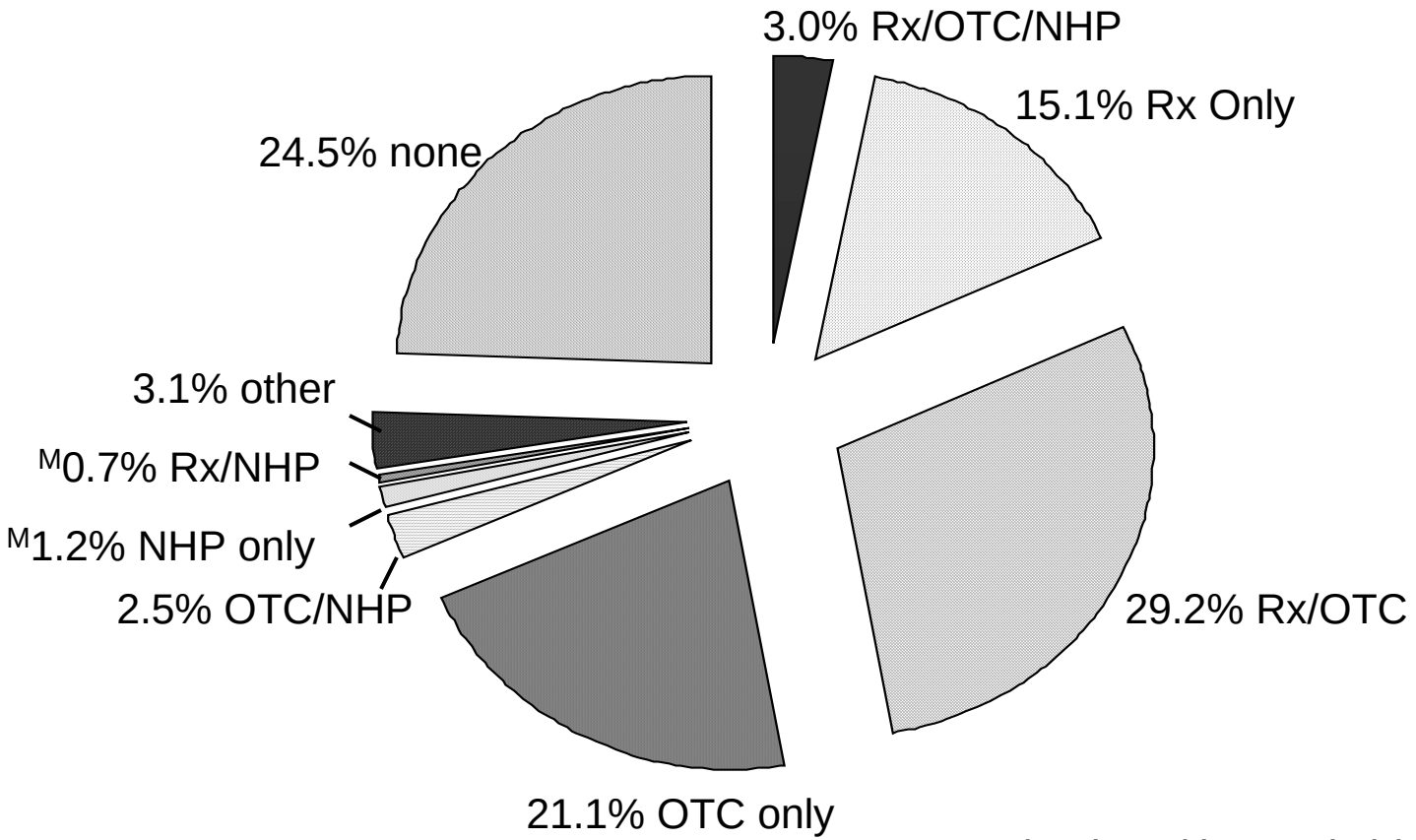
Figure 1

Distribution of Medicine by Type Among Ontario Seniors



M High sampling variability associated with these estimates

Table 1
Self Reported Number of OTC and Prescription Medicines Used in 'Last Two Days' (1996/97) by Population, Age-group and Gender (N=1303740)

Number of Medicines	Total	65-69	70-74	75-79	80+	Female	Male
0	26.6% (25.2, 28.0)*	32.2% (29.7, 34.7)	25.8% (23,5, 28.2)	24.1% (21.1, 27.1)	19.7% (17.1, 22.3)	24.0% (22.4, 25.7)	29.9% (27.7, 32.1)
1	24.9 (23.6, 26.2)	25.2 (23.0, 27.4)	27.7 (24.4, 29.0)	23.9 (21.1, 26.8)	22.5 (19.7, 25.3)	24.5 (22.9, 26.1)	25.4 (23.5, 27.4)
2	19.8 (18.6, 21.0)	18.5 (16.4, 20.6)	20.0 (17.9, 22.0)	21.7 (18.9, 24.6)	20.0 (17.3, 22.6)	20.7 (19.1, 22.3)	18.6 (16.8, 20.5)
3	11.5 (10.6, 12.4)	10.9 (9.4, 12.4)	11.8 (10.0, 13.5)	10.2 (8.3, 12.0)	13.4 (11.1, 15.7)	12.3 (11.0, 13.5)	10.5 (9.1, 11.8)
4	7.0 (6.1, 7.8)	5.6 (4.2, 7.1)	7.6 (5.9, 9.2)	7.3 (5.9, 8.8)	8.1 (6.4, 9.8)	7.5 (6.4, 8.6)	6.3 (5.1, 7.4)
5+	8.9 (8.1, 9.7)	6.7 (5.5, 7.9)	7.2 (6.0, 8.3)	11.1 (9.0, 13.2)	13.4 (11.1, 15.7)	9.5 (8.4, 10.6)	8.0 (6.8, 9.1)
N	1303740	446020	381335	241193	235193	737859	565881

***numbers in parentheses are the upper and lower confidence intervals for these estimates. Overlap between groups' intervals indicates non-significant difference in rate of use between those groups; non-overlapping intervals indicates significant differences (p=.05) between two groups.**

Table 2
Self Reported Types of Medicines Used in 'Last Two Days' by Population, Age Group and Gender†
(N=850975)

Type of Medicine	Total	65-69	70-74	75-79	80+	Female	Male
Any Rx	47.9% (46.1, 49.7)‡	43.3% (40.2, 46.5)	51.1% (47.9, 54.4)	47.4% 43.0, 51.8)	52.9% (40.2, 53.4)	52.0% (49.5, 54.6)	42.4% (39.7, 45.4)
Any OTC	55.7 (53.9, 57.6)	52.2 (49.1, 55.2)	56.5 (53.1, 59.8)	56.3 (51.9, 60.7)	61.6 (47.0, 62.0)	58.1 (55.6, 60.5)	52.7 (48.9, 55.6)
Any CAM	7.2 (6.3, 8.2)	8.3 (6.7, 10.0)	7.3 (5.7, 9.0)	6.0 (4.1, 7.9)	6.1 [M] (3.5, 7.4)	8.4 (7.0, 9.7)	5.8 (4.7, 6.9)
Rx/OTC/CAM	3.0 (2.4, 3.6)	3.1 (2.1, 4.1)	3.2 (2.2, 4.3)	2.6 [M] (1.3, 4.0)	2.9 [M] (1.1, 4.0)	3.9 (3.0, 4.9)	1.8 [M] (1.2, 2.4)
NONE*	24.3 (22.6, 26.0)	28.8 (25.7, 31.8)	22.5 (19.6, 25.4)	23.1 (19.2, 26.9)	19.3 (13.5, 20.6)	20.9 (18.7, 23.1)	28.8 (26.1, 31.5)
N	850975	30641	240858	11106	142549	480054	370920

***refers to no Rx, OTC, CAM or other.**
† multiple response categories: columns do not sum to 100%
‡ numbers in parentheses are the upper and lower confidence intervals for these estimates. Overlap between groups' intervals indicates non-significant difference in rate of use between those groups; non-overlapping intervals indicates significant differences (p=.05) between two groups.
[M]=High sampling variability associated with these estimates.

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